

AMENDMENT TO THE CLAIMS

▪ **Format of Claim Amendments**

Applicant has amended the claims as indicated below. Pursuant to the revised format to 37 C.F.R. 1.121 which is planned to be officially adopted by the USPTO in July of 2003, and which is now permitted by the office pursuant to the USPTO's release of January 31, 2003, Applicants herein submit only one version of the claims with markings to show changes. A detailed listing of all claims that are, or were in the application, are presented.

▪ **Statement with Respect to Scope of Amended and Non-Amended Claims**

Amendments to, cancellation of, and additions to, the claims are made in order to streamline prosecution of the case to embodiments that are presently anticipated to be of commercial significance, and are not made for a purpose of patentability. Any amendment, cancellation or addition made herein should not be construed in any manner as indicating Applicants' surrender of any subject matter of the application, or surrender of any equivalent to any element asserted in one or more claims. Applicants do not concede that the scope of the claims set forth below fail to extend as far as the original claims. Furthermore, any narrowing which may be evinced with respect to subject matter covered by the claims as a whole, or by one or more claims of the appended claims, when compared to claims previously in the application, should not be interpreted as indicating that the Applicants have generally disclaimed the territory between the original claimed subject matter and the amended claimed subject matter. Applicants intend each term of the claims set forth below to be read with respect to the full-breadth of the language of the claims and not to be confined to a strict literal read of amended terms. Amended claims elements are to be construed to include substantial equivalents known to those of ordinary skill in the art. Applicants assert that the amendments are made without prejudice and reserve all rights to prosecute any canceled claims, and claims preceding any amendment, and other disclosed (but not presently claimed) embodiments in the application, in future continuation applications, divisional applications, continuation-in-part applications, continuing prosecution applications, requests for continuing examination, re-examination applications and any other application claiming priority from or through the present application.

**COMPLETE LIST OF CLAIMS THAT ARE OR HAVE BEEN BEFORE THE OFFICE
AFTER ENTRANCE OF THE AMENDMENTS MADE HEREIN**

1. (Currently Amended) A device comprising:
a plurality of primary electrodes comprising one or more pairs of primary electrodes which are symmetric about a central axis;
a secondary electrode positioned centrally between the plurality of primary electrodes;
a first circuit for supplying power to the plurality of primary electrodes;
and
a second circuit for supplying power in the form of pulses of high voltage between the secondary electrode and alternate ones of the primary electrodes;
a voltage applied by the second circuit being at least about 10 times greater than a voltage independently applied by the first circuit between the primary electrodes.

Claims 2 – 6 (Canceled).

- ²7. (Currently Amended) The device of claim **1** **[[6]]**, wherein the time between pulses is less than the duration of a discharge between a pair of primary electrodes.

- ³8. (Currently Amended) The device of claim **1** **[[6]]**, wherein the duration of each pulse is sufficient to produce a single spark per pulse.

Claim 9 (Canceled).

4 10. (Original) The device of claim 1, wherein the secondary electrode is star-shaped, wherein each arm of the star extends toward a corresponding one of the primary electrodes.

5 11. (Original) The device of claim 1, wherein the secondary electrode is tapered, such that a first end of the secondary electrode is closer to the primary electrodes than a second end of the secondary electrode.

6 12. (Currently Amended) A method comprising:
providing a plurality of primary electrodes;
positioning the primary electrodes symmetrically about a central axis;
positioning a secondary electrode centrally between the plurality of primary electrodes;
applying a first voltage by a first circuit between pairs of the primary electrodes; and
applying by an independent second circuit a second voltage in the form of pulses between the secondary electrode and alternate ones of the primary electrodes;
the second voltage being at least about 10 times greater than the first voltage.

Claims 13-16 (Canceled).

7 17. (Currently Amended) The method of claim ⁶12 ~~[[16]]~~, wherein the time between pulses is less than the duration of a discharge between a pair of primary electrodes.

8 18. (Currently Amended) The method of claim ⁶12 ~~[[16]]~~, wherein the second voltage is applied for a period sufficient to produce a single spark per pulse.

Claim 19 (Canceled).

⁹20. (Original) The method of claim ⁶12, wherein the secondary electrode is star-shaped and wherein positioning the secondary electrode comprises positioning the secondary electrode with each arm of the star extending toward a corresponding one of the primary electrodes.

¹⁰21. (Original) The method of claim ⁶12, wherein the secondary electrode is tapered, such that a first end of the secondary electrode is closer to the primary electrodes than a second end of the secondary electrode.

¹¹22. (Original) A method for establishing unstable discharges between a pair of primary electrodes in a gas-filled reaction chamber, the method comprising:

- (a) positioning a secondary electrode between the primary electrodes;
- (b) applying a first voltage between the primary electrodes, wherein the first voltage is not sufficient to initiate a discharge in the absence of ionization of the gas;
- (c) applying a pulse of a second voltage between the secondary electrode and a first one of the primary electrodes to produce a first pilot discharge and corresponding ionization path;
- (d) applying a pulse of the second voltage between the secondary electrode and a second one of the primary electrodes to produce a second pilot discharge and corresponding ionization path; and
- (e) producing a primary discharge between the primary electrodes along the ionization paths produced by the pilot discharges.

¹²23. (Original) The method of claim ⁶22, wherein the first voltage is generated by a first circuit and the second voltage is generated by a second circuit which is independent of the first circuit.

¹³24. (Original) The method of claim ⁶22, further comprising repeating (c) - (e) one or more times.

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25. (Original)

A reactor comprising:
a reaction chamber;
a plurality of primary electrodes positioned in the reaction chamber;
a secondary electrode positioned between the plurality of primary electrodes;
a first circuit for supplying power to the plurality of primary electrodes;
and
a second circuit for supplying power between the secondary electrode and alternate ones of the primary electrodes;
wherein the reactor is configured to produce pilot discharges between the secondary electrode and alternate ones of the primary electrodes, wherein the pilot discharges produce ionization paths through a gas in the reactor and primary discharges between the primary electrodes are established along the ionization paths.